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DELPHI TECHNOLOGIES, INC.
M/C 480-410-202
PO BOX 5052
TROY, MI 48007

EXAMINER

DUNWOODY, AARON M

ART UNIT PAPER NUMBER

3679

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/730,309	Applicant(s) MONDRAGON-PARRA ET AL.	
	Examiner Aaron M. Dunwoody	Art Unit 3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/21/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) filed 10/21/2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-8, 10 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4678453, Aucktor et al.

In regards to claim 1, Aucktor et al discloses a stroking ball-type constant velocity joint comprising:

an inner joint member (4) having a longitudinal axis centered with respect to the inner joint member (10) an outer surface defining a plurality of radially outwardly facing longitudinal grooves (5c) in combination with a plurality of radially outwardly facing substantially helical grooves (5a, 5b), wherein each helical groove is disposed in mirrored rotational relation with a corresponding helical groove disposed on an opposite side of the longitudinal axis wherein the plurality of radially outwardly facing groove include at least three groove pairs extending in different rotational directions with respect to one another along the outer surface, wherein the at least three pair groove

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pairs includes at least one of the plurality of radially outwardly facing longitudinal grooves being two straight grooves mirrored from one another about the centered longitudinal axis of the inner joint member and a first pair of the plurality of radially outwardly facing substantially helical groove being two right-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member and a second pair of the plurality of radially outwardly facing substantially helical grooves being two left-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member.

In regards to claim 2, Aucktor et al discloses each of the plurality of radially outwardly facing grooves extending in mirrored relation to at least one other groove.

In regards to claim 4, Aucktor et al discloses each of the substantially helical grooves extending between two of the substantially longitudinal grooves.

In regards to claim 5, Aucktor et al discloses the substantially helical grooves and the substantially longitudinal grooves being disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 6, Aucktor et al discloses the plurality of radially outwardly facing grooves including at least three grooves extending in different directions with respect to one another along the outer surface.

In regards to claim 7, Aucktor et al discloses each of the three grooves extending in mirrored relation to at least one other groove.

In regards to claim 8, Aucktor et al discloses a first helical groove extending between second and third helical grooves extending in opposite rotational relation to the first helical groove.

In regards to claim 10, Aucktor et al discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and an outer surface defining a plurality of radially outwardly facing longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, wherein each helical groove is disposed in mirrored rotational relation with a corresponding helical groove disposed on an opposite side of the longitudinal axis; and

a plurality of balls (6) individually disposed in and movable along the plurality of radially outwardly facing substantially helical grooves; and

an outer joint member having an inner surface defining a plurality of radially inwardly facing substantially helical grooves wherein the plurality of radially outwardly facing substantially helical grooves of the inner joint member cooperate with the plurality of radially inwardly facing substantially helical grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls and wherein the plurality of balls transmit torque between the inner joint member and the outer joint member.

In regards to claim 21, Aucktor et al discloses a cage (7) surrounding the inner joint and defining a plurality of windows wherein each of the plurality of balls individually

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pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by DE 3818730.

In regards to claim 1, DE 3818730 discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and an outer surface defining a plurality of radially outwardly facing longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, wherein each helical groove is disposed in mirrored rotational relation with a corresponding helical groove disposed on an opposite side of the longitudinal axis wherein the plurality of radially outwardly facing groove include at least three groove pairs extending in different rotational directions with respect to one another along the outer surface, wherein the at least three pair groove pairs includes at least one of the plurality of radially outwardly facing longitudinal grooves being two straight grooves mirrored from one another about the centered longitudinal axis of the inner joint member and a first pair of the plurality of radially outwardly facing substantially helical groove being two right-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member and a second pair of the plurality of radially outwardly facing substantially helical grooves

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being two left-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member.

In regards to claim 2, DE 3818730 discloses each of the plurality of radially outwardly facing grooves extending in mirrored relation to at least one other groove.

In regards to claim 3, DE 3818730 discloses four grooves of the plurality of radially outwardly facing grooves extend parallel to one another.

In regards to claim 4, DE 3818730 discloses each of the substantially helical grooves extends between two of the substantially longitudinal grooves.

In regards to claim 5, DE 3818730 discloses the substantially helical grooves and the substantially longitudinal grooves are disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 6, DE 3818730 discloses the plurality of radially outwardly facing grooves include at least three grooves extending in different directions with respect to one another along the outer surface.

In regards to claim 7, DE 3818730 discloses each of the three grooves extends in mirrored relation to at least one other groove.

In regards to claim 8, DE 3818730 discloses a first helical groove extends between second and third helical grooves extending in opposite rotational relation to the first helical groove.

In regards to claim 9, DE 3818730 discloses the plurality of radially outwardly facing grooves includes eight grooves.

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In regards to claim 10, DE 3818730 discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and an outer surface defining a plurality of radially outwardly facing longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, wherein each helical groove is disposed in mirrored rotational relation with a corresponding helical groove disposed on an opposite side of the longitudinal axis; and

a plurality of balls individually disposed in and movable along the plurality of radially outwardly facing grooves; and

an outer joint member having an inner surface defining a plurality of radially inwardly facing substantially helical grooves wherein the plurality of radially outwardly facing substantially helical grooves of the inner joint member cooperate with the plurality of radially inwardly facing substantially helical grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls and wherein the plurality of balls transmit torque between the inner joint member and the outer joint member.

In regards to claim 11, DE 3818730 discloses the inner joint member includes a first end and a second end and the plurality of radially outwardly facing grooves extend from the first end to the second end and include four substantially longitudinal grooves disposed along the outer surface ninety degrees from one another and four substantially helical grooves individually disposed along the outer surface between two of the four

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substantially longitudinal grooves and wherein each of the substantially helical grooves extends in opposite rotational relation to two adjacent helical grooves.

In regards to claim 12, DE 3818730 discloses a stroking ball-type constant velocity joint comprising: an inner joint member having a longitudinal axis centered with respect to the inner joint member and a first end and a second end and an outer surface defining a plurality of radially outwardly facing grooves extending from the first end to the second end including four substantially longitudinal grooves disposed along the outer surface ninety degrees from one another and four substantially helical grooves individually disposed along the outer surface between two of the four substantially longitudinal grooves disposed on an opposite side of the longitudinal axis;

a plurality of balls individually disposed in and movable along the plurality of radially outwardly facing grooves;

a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves; and

an outer joint member surrounding the cage and having a third end and a fourth end and an inner surface defining a plurality of radially inwardly facing grooves extending from the third end to the fourth end including four substantially longitudinal grooves disposed along the inner surface ninety degrees from one another and four substantially helical grooves individually disposed along the inner surface between two of the four substantially longitudinal grooves and wherein the plurality of outwardly

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facing grooves of the inner joint member cooperate with the plurality of inwardly facing grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls.

In regards to claim 13, DE 3818730 discloses the substantially helical grooves and the substantially longitudinal grooves are disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 14, DE 3818730 discloses each of the helical grooves of the inner joint member and each of the helical grooves of the outer joint member extends in opposite relation to two adjacent helical grooves.

In regards to claim 15, DE 3818730 discloses at least one of the plurality of passages is defined by a first helical groove of the inner joint member and a second helical groove of the outer joint member wherein the first and second helical grooves extend in opposite rotational relation to one another.

In regards to claim 16, DE 3818730 discloses the inner joint member is further defined as having four longitudinal grooves spaced substantially ninety degrees apart from one another about the centered longitudinal axis.

In regards to claim 17, DE 3818730 discloses the plurality of radially outwardly facing substantially helical grooves is further defined as including two right-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 18, DE 3818730 discloses the plurality of radially outwardly facing substantially helical grooves is further defined as including two left-hand helical

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grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 19, DE 3818730 discloses each of the two left-hand helical grooves is spaced substantially ninety degrees apart from each of the two right-hand grooves about the centered longitudinal axis.

In regards to claim 20, DE 3818730 discloses the plurality of radially outwardly facing substantially helical grooves is further defined as including the same number of left-hand grooves and right-hand grooves.

In regards to claim 21, DE 3818730 discloses a cage (4) surrounding the inner joint and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 9 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aucktor et al in view of US patent 5685777, Schwarzler.

In regards to claim 3, Aucktor et al discloses the claimed invention except for four grooves of the plurality of radially outwardly facing grooves extending parallel to one

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another. Schwarzler teaches four grooves (20, 21) of the plurality of radially outwardly facing grooves extending parallel to one another. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide four grooves of the plurality of radially outwardly facing grooves extending parallel to one another, since duplicating the components of a prior art device is a design consideration within the skill of the art. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

In regards to claim 9, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing grooves includes eight grooves.

In regards to claim 11, Aucktor et al in view of Schwarzler disclose the inner joint member including a first end and a second end and the plurality of radially outwardly facing grooves extend from the first end to the second end and include four substantially longitudinal grooves disposed along the outer surface ninety degrees from one another and four substantially helical grooves individually disposed along the outer surface between two of the four substantially longitudinal grooves and wherein each of the substantially helical grooves extends in opposite relation to two adjacent helical grooves.

In regards to claim 12, Aucktor et al in view of Schwarzler disclose a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and a first end and a second end and an outer surface defining a plurality of radially outwardly facing grooves extending from the first end to the second end including four substantially longitudinal grooves disposed along the outer surface

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ninety degrees from one another and four substantially helical grooves individually disposed along the outer surface between two of the four substantially longitudinal grooves disposed on an oppose side of the longitudinal axis;

a plurality of balls individually disposed in and movable along the plurality of radially outwardly facing grooves;

a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves; and

an outer joint member surrounding the cage and having a third end and a fourth end and an inner surface defining a plurality of radially inwardly facing grooves extending from the third end to the fourth end including four substantially longitudinal grooves disposed along the inner surface ninety degrees from one another and four substantially helical grooves individually disposed along the inner surface between two of the four substantially longitudinal grooves and wherein the plurality of outwardly facing grooves of the inner joint member cooperate with the plurality of inwardly facing grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls.

In regards to claim 13, Aucktor et al in view of Schwarlzer disclose the substantially helical grooves and the substantially longitudinal grooves being disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 14, Aucktor et al in view of Schwarzler disclose each of the helical grooves of the inner joint member and each of the helical grooves of the outer joint member extending in opposite relation to two adjacent helical grooves.

In regards to claim 15, Aucktor et al in view of Schwarzler disclose at least one of the plurality of passages being defined by a first helical groove of the inner joint member and a second helical groove of the outer joint member wherein the first and second helical grooves extend in opposite rotational relation to one another.

In regards to claim 16, Aucktor et al in view of Schwarzler disclose the inner joint member is further defined as having four longitudinal grooves spaced substantially ninety degrees apart from one another about the centered longitudinal axis.

In regards to claim 17, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing substantially helical grooves is further defined as including two right-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 18, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing substantially helical grooves is further defined as including two left-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 19, Aucktor et al in view of Schwarzler disclose each of the two left-hand helical grooves is spaced substantially ninety degrees apart from each of the two right-hand grooves about the centered longitudinal axis.

In regards to claim 20, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing substantially helical grooves is further defined as including the same number of left-hand grooves and right-hand grooves.

Response to Arguments

Applicant's arguments filed 10/21/2005 have been fully considered but they are not persuasive. Applicant argues that Aucktor et al does not disclose three groove pairs extending in different rotational directions with respect to one another along the outer surface mirrored from one another about the centered longitudinal axis of the inner joint member. The Examiner disagrees. Figure 1 of Aucktor et al clearly illustrates three groove pairs extending in different rotational directions with respect to one another along the outer surface mirrored from one another about the centered longitudinal axis (10) of the inner joint member. Therefore, Aucktor et al meet the claim limitation.

Applicant argues that Aucktor et al does not disclose torque transmitting balls disposed in helical grooves in mirrored rotational relation to another. The Examiner disagrees. Figure 1 of Aucktor et al clearly illustrates torque transmitting balls (6) disposed in helical grooves in mirrored rotational relation to another. Therefore, Aucktor et al meet the claim limitation.

Applicant argues that Aucktor et al in view of Schwarzler does not a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves. The Examiner disagrees. Due

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to geometry of the joint, Aucktor et al in view of Schwarzler inherently disclose a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves. Without different size windows the joint would not work properly, and anyone having ordinary skill in the art would recognize the inherent geometrically requirements of the longitudinal grooves and cross grooves.

Applicant argues that DE 3818730 does not disclose three groove pairs extending in different rotational directions with respect to one another along the outer surface mirrored from one another about the centered longitudinal axis of the inner joint member. The Examiner disagrees. Figure 4 of DE 3818730 clearly illustrates three groove pairs extending in different rotational directions with respect to one another along the outer surface mirrored from one another about the centered longitudinal axis of the inner joint member. Therefore, DE 3818730 meets the claim limitation.

Applicant argues that DE 3818730 does not disclose torque transmitting balls disposed in helical grooves in mirrored rotational relation to another. The Examiner disagrees. Figure 4 of DE 3818730 clearly illustrates torque transmitting balls (3 and 11) disposed in helical grooves in mirrored rotational relation to another. Therefore, DE 3818730 meets the claim limitation.

In response to applicant's argument that balls 11 do not transmit torque, a recitation of the intended use of the claimed invention must result in a structural

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difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Applicant argues that DE 3818730 does not a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves. The Examiner disagrees. Due to geometry of the joint DE 3818730 inherently discloses a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves. Without different size windows the joint would not work properly, and anyone having ordinary skill in the art would recognize the inherent geometrically requirements of the longitudinal grooves and cross grooves.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the


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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron M. Dunwoody whose telephone number is 571-272-7080. The examiner can normally be reached on 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on 571-272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Aaron M Dunwoody
Primary Examiner
Art Unit 3679

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